

A Randomized Study to Assess the Effect of Including the Graduate Record Examinations (GRE) Results on Reviewers Scores for Underrepresented Minorities

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Web Appendix 1. Description of two UCSF graduate programs participating in this study

The PhD program in Epidemiology and Translational Science (ETS) admitted its first cohort of students in 2010. The program averages 78 applications per year, and accept about 15% of applications; on average, half of students offered admission matriculate. Due to variability in the take-up rate, cohort sizes have ranged from 3 to 10 students. 4.3 years is the program's average time to degree. The Epidemiology and Biostatistics faculty includes 70 primary faculty appointments and an additional 60 secondary, or dual, appointments.

This program emphasizes translation from research to population health impact. Located in a school of medicine on a health sciences campus, students pursue two years of coursework, emphasizing epidemiologic methods, biostatistics, and applied research with close mentoring from UCSF faculty. In addition to classroom-based learning, students complete two term-long research rotations with faculty mentors, participate in a diverse set of methodologically-oriented workshops, and serve as teaching assistants for two classes. Students represent a broad array of scientific interests, but we select for correspondence with areas of faculty expertise, such as cancer epidemiology, clinical epidemiology, health disparities, infectious disease, global health, and epidemiology of aging and chronic disease.

Day-to-day operations of the program are run by a program director, an associate program director, support from an assistant adjunct professor in the department, and a staff graduate affairs manager. The program is overseen by an executive committee of six senior faculty including the current and past department chairs, the Vice Chair for Education, the Vice Chair for Faculty Development, and three departmental division leaders.

The Global Health Sciences PhD Program (GHS) admitted its first cohort of students in 2016. The program has 22 faculty for 11 students, and of the three students who have completed the program, 4 years is the average time to degree. The program accepts students every other year.

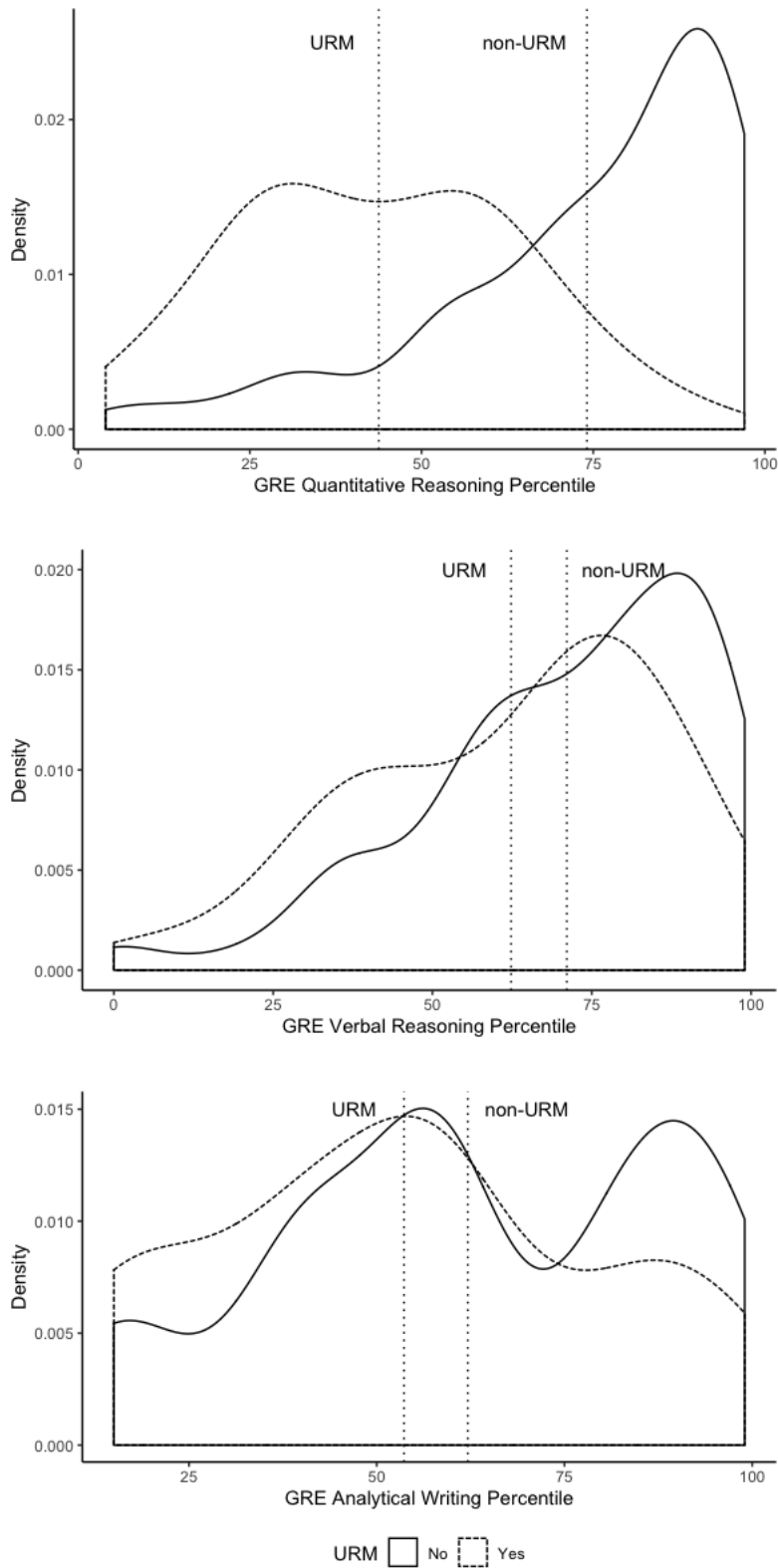
This transdisciplinary program trains doctoral students on methods and modes of inquiry drawn from public health, public policy, economics, development studies, implementation science and the social sciences to explore and address global health problems. Graduates gain comprehensive skills, training and experience in global health research and practice.

The program is structured as a four-year degree. Students spend the first two years in residence completing coursework and engaging in research rotations and teaching residencies

with UCSF faculty. After completing the core curriculum and passing the written and oral qualifying examinations, students spend the next two years focused on conducting their dissertation research and engaging in other research and professional activities. Doctoral students work closely with teaching faculty, academic and research advisors, and program leaders to receive one-on-one mentoring as they progress through coursework, qualifying exams, and dissertation research and writing.

The GHS program's operations are run by a program director, associate program director, graduate affairs officer, and program assistant.

Web Figure 1. Density plots and means of Graduate Record Examinations (GRE) percentiles by URM status for two UCSF graduate programs, 2018/2019 and 2019/2020 admission cycles.



Web Table 1. Sample reviewer score sheet.

ETS PhD Program application requirements:

<https://epibiostat.ucsf.edu/phd-admissions>

Review item	Summary of review criteria
Research experience	Articulates a clear and compelling scientific goal for pursuing PhD in Epidemiology; Connects past research experience with goals and/or describes the tools/skills obtained during research experience; Research experience(s) discussed within a scientific rationale or research question; Research experience findings interpreted to demonstrate understanding of research design and capacity to undertake future research. Experience with written and/or oral results dissemination
Academic training	Academic training in preparation for population research focused on quantitative data collection and analysis;
Letters of Recommendation	Suggest capacity for independent thinking and research potential; Indicates maturity level is appropriate for graduate level learning; strong interpersonal skills; capacity for expertise or leadership
Level of UCSF support	Faculty mentorship available to support applicant's goals; applicant goals complementary to DEB scholarship priorities; applicable coursework to enhance applicant training
Epidemiologic research potential	Articulates rationale for pursuing epidemiologic research; rationale for UCSF as institution and DEB ETS PhD program for training platform; enthusiasm for research grounded in personal, professional, or social reasons.

Web Table 2. Sample reviewer score sheet instructions

		Instructions: For each of the fields below, please score each applicant on a scale of 1 to 10 (1=outstanding).						
last_name	first_name	Research experience	Academic training	Letters of Recommendation	Level of UCSF support	Epidemiologic research potential	Overall score	Suggestion for external reviewer/mentor
Applicant 1								
Applicant 2								

Web Table 3. Effect of GRE results and URM status on each subcategory of reviewer scores (Research Experience).

Mixed Model Estimates for the Effect of GRE Results and URM on Reviewer Score (Research Experience).

Covariates ^a	Estimate	95% CI
(Intercept)	3.72	3.41, 4.04
GRE Unmasked	0.04	-0.15, 0.23
URM	-0.05	-0.58, 0.48
GRE Unmasked x URM	-0.23	-0.67, 0.20

CI, confidence interval; GRE, Graduate Record Examinations; URM, underrepresented minority

^aModel adjusted for reviewer (fixed effects) with random effects for applicant

Web Table 4. Effect of GRE results and URM status on each subcategory of reviewer scores, Academic Training.

Mixed Model Estimates for the Effect of GRE Results and URM on Reviewer Score (Academic Training).

Covariates ^a	Estimate	95% CI
(Intercept)	4.06	3.76, 4.37
GRE Unmasked	0.03	-0.16, 0.22
URM	0.36	-0.14, 0.85
GRE Unmasked x URM	-0.02	-0.47, 0.42

CI, confidence interval; GRE, Graduate Record Examinations; URM, underrepresented minority

^aModel adjusted for reviewer (fixed effects) with random effects for applicant

Web Table 5. Effect of GRE results and URM status on each subcategory of reviewer scores Letters of Recommendation.

Mixed Model Estimates for the Effect of GRE Results and URM on Reviewer Score (Letters of Recommendation).

Covariates ^a	Estimate	95% CI
(Intercept)	3.62	3.31, 3.94
GRE Unmasked	0.18	0.004, 0.36
URM	0.38	-0.16, 0.91
GRE Unmasked x URM	-0.38	-0.81, 0.04

CI, confidence interval; GRE, Graduate Record Examinations;
 URM, underrepresented minority
^aModel adjusted for reviewer (fixed effects) with random
 effects for applicant

Web Table 6. Effect of GRE results and URM status on each subcategory of reviewer scores
 Level of UCSF Support.

**Mixed Model Estimates for the Effect of GRE Results and
 URM on Reviewer Score (Level of UCSF Support).**

Covariates ^a	Estimate	95% CI
(Intercept)	4.38	4.05, 4.71
GRE Unmasked	0.05	-0.16, 0.26
URM	-0.09	-0.61, 0.43
GRE Unmasked x URM	-0.17	-0.66, 0.31

CI, confidence interval; GRE, Graduate Record Examinations;
 URM, underrepresented minority
^aModel adjusted for reviewer (fixed effects) with random
 effects for applicant

Web Table 7. Effect of GRE results and URM status on each subcategory of reviewer scores
 Epidemiologic Research Potential.

**Mixed Model Estimates for the Effect of GRE Results and
 URM on Reviewer Score (Epidemiologic Research
 Potential).**

Covariates ^a	Estimate	95% CI
(Intercept)	3.60	3.27, 3.92
GRE Unmasked	0.04	-0.17, 0.25
URM	-0.004	-0.52, 0.51
GRE Unmasked x URM	-0.24	-0.73, 0.24

CI, confidence interval; GRE, Graduate Record Examinations;
 URM, underrepresented minority
^aModel adjusted for reviewer (fixed effects) with random
 effects for applicant

Web Table 8. Effect of GRE results, URM status, and undergraduate GPA on reviewer scores

**Mixed Model Estimates for the Effect of GRE Status,
URM, and Undergraduate GPA on Reviewer Score.**

Covariates ^a	Estimate	95% CI
(Intercept)	4.85	3.22, 6.48
GRE Unmasked	0.14	-1.14, 1.43
URM	-0.01	-0.57, 0.55
Undergraduate GPA	-0.21	-0.66, 0.23
GRE Unmasked x URM	-0.24	-0.69, 0.21
GRE Unmasked x GPA	-0.001	-0.36, 0.36

CI, confidence interval; GRE, Graduate Record Examinations;
URM, underrepresented minority

^aModel adjusted for reviewer (fixed effects) with random
effects for applicant